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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/523,638 | 10/03/2005 | Kazuhiko Ozawa | 450100-04727 | 5870 |

7590 10/09/2007

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| EXAMINER | |
|---|---|
| KURR, JASON RICHARD | |
| ART UNIT | PAPER NUMBER |
| 2615 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 10/09/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/523,638 | OZAWA, KAZUHIKO | |
| | Examiner | Art Unit | |
| | Jason R. Kurr | 2615 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *04 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/4/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamamura et al (US 5,426,704) in view of Umemura et al (US 5,708,637).

With respect to claim 1, Tamamura discloses an adaptive noise reduction method including an adaptive filter (fig.1,2 #4) for obtaining a signal approximate to a periodic signal to be reduced from a reference input pulse signal (fig.1 #1 "p(t)", col.5 ln.38-42) synchronous with said periodic signal to be reduced within a main input signal (fig.1,2 "e(n)"), and composition means (fig.2 #66) for subtracting an output signal (fig.2 "signal from #45 to #66) of said adaptive filter from said main input signal, in which an output signal of said composition means is fed back to said adaptive filter and said adaptive filter performs adaptation processing so that noise power of the output signal of said composition means may be minimum (col.10 ln.22-29), wherein a memory (fig.2 #44) constituting said adaptive filter, a read-address generator for generating read addresses of the ring-shaped memory and a write-address generator (fig.2 #43) for generating write addresses thereof are provided, and relative phase between said read address and said write address is made to be variable (col.9 ln.18-45).

Tamamura does not disclose expressly a ring shaped memory. Umemura discloses a ring shaped memory wherein data is written to the memory and read from the memory (col.2 ln.16-33). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the ring shaped memory of Umemura in the invention of Tamamura. The motivation for doing so would have been to provide a memory system where data loss is minimized as taught by Umemura (col.1 ln.60-67).

With respect to claim 2, Tamamura discloses an adaptive noise reduction method according to claim 1, wherein the relative phase between said read address and said write address varies in accordance with a change in a period of said reference input pulse signal. It is implied that the delay elements within the adaptive filter #4 create a varying phase between inputted and outputted signals to the filter, as tap information is updated (col.5 ln.26-37).

With respect to claim 3, Tamamura discloses an adaptive noise reduction method according to claim 1, wherein said composition means subtracts the output signal of said adaptive filter from said main input signal through data interpolation means (col.10 ln.22-36).

With respect to claim 4, Tamamura discloses an adaptive noise reduction method according to claim 1, wherein the number of taps (the number of words) M of the ring-shaped memory constituting said adaptive filter has a relation of $M \geq S.TM$ where S is a sampling frequency of said periodic signal to be reduced and TM is the maximum period that said reference input pulse signal can take (col.8 ln.10-28).

With respect to claim 5, Tamamura discloses an adaptive noise reduction apparatus including an adaptive filter (fig.1,2 #4) for obtaining a signal approximate to a periodic signal to be reduced from a reference input pulse signal (fig.1 #1 "p(t)", col.5 ln.38-42) synchronous with said periodic signal to be reduced within a main input signal (fig.1,2 "e(n)") and composition means (fig.2 #66) for subtracting an output signal (fig.2 "signal from #45 to #66) of said adaptive filter from said main input signal, in which an output signal of said composition means is fed back to said adaptive filter and said adaptive filter performs adaptation processing so that noise power of the output signal of said composition means may be minimum (col.10 ln.22-29), comprising: a memory (fig.2 #44) constituting said adaptive filter, a read-address generator for generating read addresses of said ring-shaped memory and a write-address generator (fig.2 #43) for generating write addresses thereof, wherein relative phase between said read address and said write address is made to be variable (col.9 ln.18-45).

Tamamura does not disclose expressly a ring shaped memory. Umemura discloses a ring shaped memory wherein data is written to the memory and read from the memory (col.2 ln.16-33). At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the ring shaped memory of Umemura in the invention of Tamamura. The motivation for doing so would have been to provide a memory system where data loss is minimized as taught by Umemura (col.1 ln.60-67).

With respect to claim 6, Tamamura discloses an adaptive noise apparatus according to claim 5, wherein the relative phase between said read address and said write address varies in accordance with a change in a period of the reference input

signal. It is implied that the delay elements within the adaptive filter #4 create a varying phase between inputted and outputted signals to the filter, as tap information is updated (col.5 ln.26-37).

With respect to claim 7, Tamamura discloses an adaptive noise reduction apparatus according to claim 5, wherein said composition means subtracts the output signal of said adaptive filter from said main input signal through data interpolation means (col.10 ln.22-36).

With respect to claim 8, Tamamura discloses an adaptive noise reduction apparatus according to claim 5, wherein the number of taps (the number of words) M of the ring-shaped memory constituting the adaptive filter has a relation of $M \geq S.TM$ where S is a sampling frequency of said periodic signal to be reduced and TM is the maximum period that said reference input pulse signal can take (col.8 ln.10-28).

## *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cole (US 6,633,894 B1) discloses a signal processing arrangement including variable length adaptive filter and method.

Tamamura et al (US 5,602,927) discloses a vehicle internal noise reduction system and method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason R. Kurr whose telephone number is (571) 272-0552. The examiner can normally be reached on M-F 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 273-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JK

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